

COMPUTER READABLE STORAGE MEDIA  
PROVIDING A PROGRAM GUIDE VIEWED  
WITH A PERCEIVED TRANSPARENCY  
OVER A TELEVISION PROGRAM

5 Cross Reference To Related Applications

This application is a continuation of U.S. Patent Application No. 09/887,897, filed June 22, 2001, which is a continuation of U.S. Patent Application No. 09/421,953, filed October 20, 1999, now U.S. Patent  
10 No. 6,305,016, which is a continuation of U.S. Patent Application No. 08/974,944, filed November 20, 1997, now U.S. Patent No. 6,020,929, which is a continuation of U.S. Patent Application No. 08/599,143, filed February 9, 1996, now U.S. Patent No. 5,828,420, which  
15 is a continuation of U.S. Patent Application No. 08/234,060, filed April 28, 1994, now U.S. Patent No. 5,502,504.

Background of the Invention

20 This invention relates generally to interactive video communications and more particularly concerns viewer controlled channel programming guide displays.

Programming guide information is presently  
25 displayed to the home TV viewer in a non-interactive

scroll on a single channel dedicated to programming guide information.

When the home viewer selects the programming guide channel, viewing of the channel previously selected is interrupted. While the viewer executes best judgment to when to make the change, key portions of the program on the previously selected channel may be missed. This is especially probable in cases of live programming. It is also especially irritating to the viewers not in possession of the controller.

It is, therefore, an object of this invention to provide a process and in-home scrolling hardware by which a home viewer may interactively control a channel programming guide. Another object of this invention is to provide a process and in-home scrolling hardware in which the scroll can be simultaneously superimposed on and displayed with the programming of any channel accessible to the home viewer. Another object of this invention is to provide a process and in-home scrolling hardware by which a home viewer may control the comparative weight of the programming guide or superimposed signal in relation to the basic programming signal over which it is superimposed.

#### Summary of the Invention

In accordance with the invention, a system interactively controlled by a TV viewer remote control transmitter displays a scroll program guide superimposed on the normal programming displayed on any channel accessible to the viewer's display screen. A tuner receives TV radio frequency or optical transmission signals in a plurality of cable channels and passes a viewer usable signal of any selected one

of the channels to a signal combiner. A computer receives any of a plurality of control signals from the TV viewer remote control transmitter. It also controls the tuner to pass the viewer usable signal of any  
5 selected channel in response to one of the control signals from the TV viewer remote control transmitter. It also receives and stores a scroll input picture image signal containing local program guide data and generates a scroll output picture image signal  
10 consisting of at least a portion of the scroll input picture image signal. The signal combiner combines the viewer usable signal of any selected channel from the tuner with the output picture image signal from the computer to provide a display signal with the program  
15 guide display superimposed over the channel programming display for input to the viewer's display screen. The computer is responsive to a control signal from the remote to change the weight of the superimposed signal in relation to the base or normal programming signal.

20 Brief Description of the Drawings

Other objects and advantages of the invention will become apparent upon reading the following detailed description and upon reference to the drawings in which:

25 FIG. 1 is a block diagram illustrating a preferred embodiment of the hardware of the interactive scrolling program guide;

FIG. 2 is a flow chart illustrating the basic process and options of the video mix capability  
30 of the interactive scrolling program guide;

FIG. 3 is a representation of an interactive scrolling program guide menu display;

FIG. 4 is a representation of an interactive scrolling program guide display in a video mix mode;

FIG. 5 is a representation of the interactive scrolling program guide display in a solid  
5 or one hundred percent programming guide condition relative to the base signal;

FIG. 6 is a representation of the interactive scrolling program guide display in a ninety  
percent programming guide condition relative to the  
10 base signal;

FIG. 7 is a representation of the interactive scrolling program guide display in an  
eighty percent programming guide condition relative to  
the base signal;

15 FIG. 8 is a representation of the interactive scrolling program guide display in a  
seventy percent programming guide condition relative to  
the base signal; and

FIG. 9 is a representation of the  
20 interactive scrolling program guide display in a sixty  
percent programming guide condition relative to the  
base signal.

While the invention will be described in connection with a preferred embodiment and process, it  
25 will be understood that it is not intended to limit the  
invention to that embodiment or process. On the  
contrary, it is intended to cover all alternatives,  
modifications and equivalents as may be included within  
the spirit and scope of the invention as defined by the  
30 appended claims.

Detailed Description of the Invention

Turning first to FIG. 1, the components of the interactive scroll program guide are illustrated.

5 A computer 11 having a command information receiver, preferably an infrared or radio frequency receiver 13, provides a control signal 15 to a tuner 17 and a picture image signal 19 to a digital video board 21. The tuner 17 converts or demodulates radio frequencies

10 or optical transmissions to a signal usable by the viewer to output a signal 23 selected from a plurality of signals 25 input to the tuner 17 from the cable source (not shown), typically frequency division multiplexed video, audio and data signals transmitted

15 via a coaxial cable, over-the-air radio frequencies or fiber optics. The digital video board 21 converts digital data into a video signal. The tuner output or base programming signal 23 has superimposed thereon a scroll information picture image signal 27 from the

20 digital video board 21 in a genlock signal combiner or overlayer 29. The combined scroll and TV picture signal 31 is then displayed on a video signal display device such as the display screen 33 of the viewer's television. The combiner 29 permits the viewer to

25 select the weight of the scroll information picture signal 27 in relation to the base programming signal 23. The viewer sends commands to the receiver 13 to control the operation of the computer 11 by the use of a remote control transmitter, preferably an infrared or

30 radio frequency transmitter 35. The computer 11 is based on microprocessor and may utilize random access (RAM) and/or read only (ROM) memory. The software necessary to operate the microprocessor may be embedded

in the device or downloaded via the cable system to the device.

The above described interactive scroll program guide components operate in response to the control of the computer 11. As shown in FIG. 2, while the home viewer is watching programming presented on his display 33 in response to the tuner 17 feeding any basic program signal 23 from the input selections 25 to the genlock combiner 29, the viewer may opt to simultaneously view the programming guide scroll available to the combiner 29 from the computer 11 through the digital video board 21. The viewer simply presses a predetermined key on the remote 35 to select the program guide display as is illustrated in FIG. 3. As shown in FIG. 3, the program guide nomenclature (Prgm Guide) will appear on the screen between arrows indicating upward or downward menu access to the possible choices in the program guide routine. By use of the up and down arrows on the controller 35, the program guide menu can be manipulated to the "video mix" condition, illustrated as step 51 in the routine of FIG. 2. The visual appearance of the viewer's display 33 in the "video mix" condition is illustrated in FIG. 4. Upon "user selection of video mix" 51, the computer 11 routine inquires as to whether or not there has been a key pressed 53 requesting that the weight of the program guide signal 27 be changed in relation to the basic programming signal 23. If the answer to this inquiry is "NO", routing proceeds through a path 55 to continue the "key pressed" inquiry 53. If the response to the "key pressed" inquiry 53 is "YES", the routine continues to a "user exit" inquiry 57. If the viewer has opted to exit the video mix routine, a "YES"

response to the "user exit" inquiry 57 will result in a "return to the previous menu" 59. If, however, the response to the "user exit inquiry" 57 is "NO", the routine continues to a new mix selection inquiry 61.

5 If the response to the "new mix selection" inquiry 61 is "NO", the routine returns via the route 55 to the original "key pressed" inquiry 53. If the answer to the "new mix selection" inquiry 61 is "YES", the routine proceeds through the calculate hardware

10 parameters step 63 and the "set hardware to new level" step 65, at which point the genlock combiner 29 automatically performs these functions to establish the weight of the program guide signal 27 superimposed by the genlock combiner 29 over the basic programming

15 signal 23. When the hardware is set to its new level 65, the routine continues through the path 55 to the "key pressed" inquiry 53 to determine whether the viewer has again selected a different percentage of signal mix.

20 FIGS. 5 through 9 illustrate the solid or one hundred percent video mix, ninety percent video mix, eighty percent video mix, seventy percent video mix and sixty percent video mix, respectively, the percentage indicating the weight the programming guide signal 27

25 superimposed on the basic programming signal 23.

If the video mix routine is exited and later reselected, the weight of the programming guide signal 27 will automatically be the weight last opted by the viewer.

30 Thus, each individual viewer will be provided with a scroll program guide in which the home viewer can interactively determine whether the program guide

scroll should be displayed and, if so, its weight relative to the basic program data.

Thus, it is apparent that there has been provided, in accordance with the invention, a video mix  
5 program guide that fully satisfies the objects, aims and advantages set forth above. While the invention has been described in conjunction with specific embodiments thereof, it is evident that many alternatives, modifications and variations will be  
10 apparent to those skilled in the art and in light of the foregoing description. Accordingly, it is intended to embrace all such alternatives, modifications and variations as fall within the spirit of the appended claims.